

INTERNATIONAL COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 701583PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 00/ 00264	International filing date (day/month/year) 13/03/2000	(Earliest) Priority Date (day/month/year) 12/03/1999
Applicant MAGNA SEATING SYSTEMS INC. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

SAFETY MECHANISM FOR A FOLD AND TUMBLE SEAT ASSEMBLY**BACKGROUND OF THE INVENTION****1. Field of the Invention**

The present invention relates generally to a fold and tumble seat assembly, and more particularly, to a safety mechanism for controlling the folding and tumbling of a seat back and seat cushion of the seat assembly.

2. Description of the Prior Art

Seat assemblies for automotive vehicles typically include a generally horizontal seat cushion and a generally upright seat back for supporting a seat occupant in an upright seating position. The seat cushion is commonly mounted to a planar floor within the vehicle by front and rear seat cushion risers and the seat back is commonly pivotally attached to a seat cushion for pivotal movement between the upright seating position to a forward folded position resting against the generally horizontal seat cushion. The forward folding movement of the seat back accommodates increase storage capacity in automotive vehicles, such as sport utility vehicle, mini-vans, and the like. The seat assembly may also be pivotal about the front seat cushion risers from the seating position to a forward tumble position wherein the seat back is pivoted to the folded position and then the seat cushion and seat back are pivoted about the front seat cushion riser to an upright tumble position. These type of seat assemblies, commonly referred to as fold and tumble seat assemblies, are exemplified in United States Patent No. 5,393,116 to Bolsworth et al., issued February 28, 1995 and United States Patent No. 5,775,763 to Gliner et al., issued July 7, 1998.

Preferably, the seat back is pivoted to the folded position prior to the seat cushion and seat back being pivoted to the tumbled position. Additionally, the seat back is preferably pivoted from the folded position to the upright seating position after the seat cushion has been fully pivoted and returned from the tumbled position to the seating position.

It remains desirable, however, to provide a safety mechanism to ensure and insist that the seat assembly may not be pivoted from the seating position to the tumble position until the seat back has been pivoted to the folded position. It also remains desirable to provide a safety mechanism to ensure and insist that the seat assembly is fully returned to from the tumble position to the seating position and secured to the vehicle floor prior to the seat back being pivoted from the folded position to the upright seating position for seat occupant use.

SUMMARY OF THE INVENTION

5 The present invention includes a seat assembly for use in an automotive vehicle comprising a seat cushion for supporting a seat occupant on the seat assembly and a seat back operatively coupled to the seat cushion for pivotal movement between a generally upright seating position and a forwardly folded position pivoted against the seat cushion. The seat assembly includes a front seat riser adapted to secure the seat assembly to the vehicle. The front seat riser is pivotally coupled to the seat cushion for pivoting the seat cushion between a
10 generally horizontal seating position and a generally upright tumbled position. The seat assembly also includes a rear seat riser adapted to releasably secure the seat assembly to the vehicle. The rear seat riser includes a locking latch operable between a latched position for releasably latching the rear seat riser to the vehicle with the seat cushion in the seating position and an unlatched position for releasing the rear seat riser from the vehicle to allow
15 the seat cushion to pivot from the seating position to the tumble position. The seat assembly further includes a seat back pivot mechanism coupled to the seat back and operable between a locked position, locking the seat back in the upright seating position, and an unlocked position, providing pivotal movement of the seat back between the upright seating position and the folded position. The seat assembly additionally includes a blocking member coupled
20 between the seat back and the locking latch and operable in a first blocking position for engaging the seat back in the upright seating position and preventing the locking latch from releasing from the latched position to the unlatched position when the seat back is locked by the seat back pivot mechanism in the upright seating position.

25 The blocking member is also operable in a second blocking position for engaging the seat back in the folded position when the locking latch is in the unlatched position and preventing pivotal movement of the seat back from the folded position to the seating position until the locking latch is returned to the latched position latching the rear seat riser to the vehicle with the seat cushion in the seating position.

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BRIEF DESCRIPTION OF THE DRAWINGS

5 Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

10 Figure 1 is an environmental view of a seat assembly shown pivotal between an upright seat position and a folded and tumble position;

Figure 2 is a perspective view of the seat assembly with a seat back in a folded position and a seat cushion in a tumbled position;

15 Figure 3 is a side view of the seat assembly having a locking latch in a latched position and a blocking member engaging the seat back in a first blocking position;

Figure 4 is a side view of the seat assembly having the locking latch in an unlatched position and the blocking member engaging the seat back in a second blocking position; and

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Figure 5 is a partially broken perspective view of the seat assembly having the locking latch in the latched position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

25 Referring to the Figures wherein like reference number correspond to like part throughout the several views, an automotive vehicle is generally shown at 10 in Figure 1. The vehicle 10 includes at least one front, or first row, seat assembly 12 and at least one rear, or second row, seat assembly 14. It should be appreciated that the front row typically includes a driver side seat assembly, as shown at 12 and a passenger side seat assembly (not shown). Additionally, the second row may include more than the one seat assembly 14
30 aligned in a row between the inboard and outboard side of the vehicle 10 as is commonly known in the art. Still further, the vehicle 10 may also include a third row of one or more seat assemblies similar to the seat assembly 14. The seat assembly 14 only will be described herein for illustrative purposes. The seat assembly 14 of Figure 1 is shown in a generally

horizontal and upright seating position in solid lines for supporting a seat occupant and is shown in a fold and tumble position in dashed lines for providing additional cargo space within the vehicle 10. The seat assembly 14 is releasably and pivotally secured to a planar floor 16 within the vehicle 10 as will be described in further detail hereinbelow.

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The seat assembly 14 includes a seat cushion 18 for supporting the seat occupant on the seat assembly 14 and a seat back 20 operatively coupled to the seat cushion 18 and pivotal between a generally upright seating position, as shown in solid lines, and a forwardly folded position pivoted against said seat cushion, as shown in dashed lines. The seat
10 assembly 14 also includes a seat back pivot mechanism 22 coupled to the seat back 20 and operable between a locked position locking the seat back 20 in the upright seating position and an unlocked position for providing pivotal movement of the seat back 20 between the upright seating position and the folded position. The seat back pivot mechanism 22 is any mechanism suitable for pivoting the seat back 20 between the upright seating position and the
15 folded position as is commonly known in the art.

Referring to Figures 1 and 2, the seat assembly 14 includes a support frame 24 for supporting the seat cushion 18 above the vehicle floor 16. The support frame 24 includes a pair of spaced apart and parallel side rails 26, 28 interconnected by a pair of spaced apart front and
20 rear cross bars 30, 32. The seat assembly 14 further includes a pair of spaced apart front seat risers 34, 36 adapted to secure the seat assembly 14 to the vehicle floor 16. Each front seat riser 34, 36 includes a first end fixedly secured to the floor 16 by bolts or the like and a second end extending upwardly from the floor 16 and pivotally attached to the side rails 26, 28 of the support frame 24 by a pivot pin 38. The seat assembly 14 is pivotal about the front
25 seat risers 34, 36 between the seating position and the folded and tumbled position. More specifically, the seat cushion 18 is pivotal about the front seat risers 34, 36 between a generally horizontal seating position, shown in solid lines in Figure 1, and a forward tumbled position, as shown in dashed lines in Figure 1. Coincidentally, the seat back 20 moves with the seat cushion 18 between the seating and tumbled positions. A seat cushion spring bias
30 member, such as a torsion spring or coil spring 39 as shown, is interconnected between the seat cushion 18 and each front seat riser 34, 36 for biasing the seat cushion 18 from the seating position to the tumbled position. More specifically, the coil spring 39 is connected between each of the front seat risers 34, 36 and the pivot pin 38.

The seat assembly 14 further includes a pair of spaced apart rear seat risers 40, 42 adapted to releasably secure the seat assembly 14 to the vehicle floor 16. The front seat risers 34, 36 and rear seat risers 40, 42 elevated the seat assembly 14 above the vehicle floor 16.

5 Referring to Figures 2-4, each of the rear seat risers 40, 42 include a support bracket 44 pivotally secured to the respective side rail 26, 28 by the rear cross bar 32. Each rear seat riser 40, 42 further includes a locking latch 46 operable between a latched position for releasably latching the rear seat risers 40, 42 to the vehicle floor 16 with said seat cushion 18 in the seating position, as shown in Figure 3, and an unlatched position for releasing the rear
10 seat risers 40, 42 from the vehicle floor 16 to allow the seat cushion 18 to pivot from the seating position to the tumbled position.

Referring to Figures 2-5, the locking latch 46 includes a latch plate 48 pivotally coupled to the support bracket 44 of the rear seat riser 40, 42 by a pivot rod 50 for providing
15 pivotal movement of the latch plate 48 between the latched position and the unlatched position. The latch plate 48 includes a C-shaped hook portion 52 and an extension portion 54 along opposing sides of the pivot rod 50. The hook portion 52 engages with a striker bar 56 mounted to the vehicle floor 16 as shown in Figures 3 and 5 in the latched position to retain the seat cushion 18 in the horizontal seating position. The locking latch 48 also includes a
20 latch spring 58, such as a coil spring, having a first end connected to the latch plate 48 and a second end connected to the pivot rod 50 for biasing the latch plate 48 from the unlatched position to the latched position engaged with the striker bar 56. The locking latch 46 additionally includes a release handle 60 pivotally secured between the rear seat risers 40, 42 and engagable with the latch plate 48 for pivoting the latch plate 48 from the latched position
25 to the unlatched position. The release handle 60 is an elongated rod extending between and pivotally coupled at each opposing end to the support bracket 44 of the rear seat risers 40, 42. The opposing ends of the release handle 60 include a cam 61, which engages a cam lobe 63 extending outwardly from the latch plate 48 for pivoting the latch plate 48 about the pivot rod 50 from the latched position to the unlatched position when the release handle 60 is rotated in
30 the clockwise direction. It should be appreciated that the release handle 60 may be directly connected to the latch plates 48 or the latch plates 48 may be bridged or interconnected for simultaneous movement by a release handle 60 engaging only one latch plate 48.

The locking latch 46 further includes a latch gate 62 pivotally connected to the support bracket 44 of the rear seat riser 40 for pivotal movement between an open position engaging and retaining the latch plate 48 in the unlatched position, as shown in Figure 4 and a closed position disengaged from the latch plate 48 in the latched position, as shown in Figure 3. The latch gate 62 is pivotally attached to the support bracket 44 by a pivot pin 64 and includes a gate finger 66 which engages the striker bar 56 in the closed position to capture the striker bar 56 between the latch gate 62 and the latch plate 48 and prevent rattle therebetween as shown in Figure 3. The gate finger 66 also engages the hook portion 52 of the latch plate 48 in the open position to retain the latch plate 48 in the latched position as will be described in further detail hereinbelow. The locking latch 46 includes a gate spring 68, such as a coil spring, connected between the latch gate 62 and the pivot pin 64 for biasing the latch gate to the open position to engage the hook portion 52 of the latch plate 48 when in the unlatched position.

Referring again to Figures 3 and 4, the seat assembly 14 further includes a blocking member 70 coupled between the seat back 20 and the locking latch 46 and operable in a first blocking position for engaging the seat back 20 in the upright seating position and preventing the locking latch 46 from releasing from the latched position to the unlatched position when the seat back 20 is locked by the seat back pivot mechanism 22 in the upright seating position. The blocking member 70 is also operable in a second blocking position for engaging the seat back 20 in the folded position when the locking latch 46 is in the unlatched position and preventing pivotal movement of the seat back 20 from the folded position to the upright seating position until the locking latch 46 is returned to the latched position, latching the rear seat risers 40, 42 to the vehicle floor 16 with the seat cushion 18 in the seating position.

The blocking member 70 includes a support brace 72 fixedly secured to the support frame 24 of the seat cushion 18 and extending upwardly therefrom adjacent the lower portion of the seat back 20. The blocking arm 70 also includes a generally L-shaped blocking arm 74 pivotally connected to the support brace 72 for pivotal movement between the first blocking position and the second blocking position in response to the locking latch 46 operating between the latched position and the unlatched position. The blocking arm 74 includes a lower leg 76 pivotally connected to the support brace 72 by a pivot pin 78 and an upper arm 80 extending outwardly from the lower leg 76 adjacent the seat back 20. More specifically,

the seat back 20 is pivotal about a pivot axis A defined by the seat back pivot mechanism 22. The seat back 20 includes an abutment nub 84 projecting laterally from the side of the seat back 20 adjacent the support brace 72 and spaced from the pivot axis A. The lower leg 76 engages the nub 84 when the seat back 20 is in the upright seating position as shown in Figure 3. The upper arm 78 engages the nub 84 when the seat back 20 is in the folded position and the locking latch 46 is in the unlatched position. Still further, the blocking member 70 includes a spring bias member 86, such as an elongated wire coil spring, connected between the support brace 72 and the lower leg 76 of the blocking arm 74 for automatically returning the blocking arm 74 from the second blocking position to the first blocking position when the locking latch 46 returns from the unlatched position to the latched position.

A link 88, such as a pull-pull type cable, is interconnected between the extension portion 54 of the latch plate 48 and the lower leg 76 of the blocking arm 74 for pivoting the blocking arm 74 from the first blocking position to the second blocking position in response to the latch plate 48 pivoting from the latched position to the unlatched position.

In operation, the seat assembly 14 is operable between a seating position as shown in Figure 1 for supporting a seat occupant on the seat and a folded and tumbled position as shown in Figure 2 for providing additional cargo space in the vehicle 10. In the seat position, the seat back 20 is positioned in the generally upright seating position and the seat cushion is positioned in the generally horizontal seating position. In the folded and tumbled position, the seat back 20 is pivoted to the folded position and the seat cushion is pivoted to the tumbled position. When the seat back 20 is in the upright seating position as shown in Figure 3, the blocking member 70 prevents the locking latch 46 from releasing from the latched position with the striker bar 56. The blocking member 70 prevents unlatching of the locking latch 46 so that the seat cushion is lockingly secured to the vehicle floor 16 to support a seat occupant and prevent incident pivotal movement of the seat assembly 14 from the seating position to the folded and tumble position. More specifically, the nub 84 projecting outwardly from the seat back 20 is positioned immediately adjacent to the lower leg 76 of the blocking member 70 and above the pivot pin 78 when the seat back 20 is locked in the upright seating position by the seat back pivot mechanism 22. If the seat occupant attempts to actuate the locking latch 46 from the latched position to the unlatched position, the blocking arm 74 abuts the nub 84 in the first blocking position to prevent pivotal rotation of the blocking arm 74 about the pivot

pin 78, and thus, also prevent the pivotal movement of the latch plate 48 from the latched position to the unlatched position. In otherwords, since the latch plate 48 is directly connected to the blocking arm 74 by the link 88, when the seat occupants attempts to pivot the release handle 60 and pivot the latch plate 48 from the latched position to the unlatched position, the link 88 pulls on the lower leg 76 to pivot the blocking arm 74 about the pivot pin 78. However, with the seat back 20 in the upright position, the lower leg 76 abuts with the nub 84 and prevents rotation of the blocking arm 74, and therefore, the latch plate 48 is also prevent from pivoting to the unlatched position.

To manipulate the seat assembly 14 from the seating position to the folded position, the seat occupant actuates a release lever 90 on the seat back pivot mechanism 22 to unlock the seat back 20 from the upright seating position. The seat back 20 may then be pivoted forwardly, or counterclockwise, about the seat back pivot mechanism 22, that defines the seat back pivot axis A, from the upright seating position to the forward folded position. As shown in Figure 4, when the seat back 20 is in the folded position, resting against the seat cushion 18, the nub 84 is moved with the seat back 20 from a position adjacent to the lower leg 76 of the blocking arm 74, as shown in Figure 3, to a position above and adjacent the upper arm 80, as shown in dashed lines in Figure 4. Therefore, the blocking arm 74 is now clear to pivot about the pivot pin 78. Additionally, as long as the locking latch 46 is in the latched position, securing the latch plate 48 to the striker bar 56, the blocking arm 74 remains biased toward the counterclockwise direction and in the first blocking position as shown in dashed lines of Figure 4. Therefore, the seat back 20 is free to pivot between the upright seating position and the folded position with the nub 84 rotating with the seat back 20 clear of the blocking arm 74.

To manipulate the seat assembly 14 from the folded position to the tumbled position, the seat occupant may now actuate the release handle 60 to pivot the locking latch 46 from the latched position engaged with the vehicle floor 16 to the unlatched position releases from the floor 16. More specifically, the release handle 60 is pivoted about the support brackets 44 in the clockwise, or downward, direction. The cam 61 on the release handle 60 engages with the cam lobe 63 on the latch plate 48 to rotate the latch plate 48 about the pivot rod 50 in the clockwise direction and disengage the hook portion 52 from the striker bar 56. Once the hook portion 52 is cleared from the striker bar 56, the latch gate 62 rotates about the pivot pin 64 until the gate finger 66 contacts the distal end of the hook portion 52 to retain the latch

plate 48 in the unlatched position. Simultaneously, the extension portion 54 of the latch plate 48 pulls on the link 88, or cable, which is connected to the lower leg 76 of the blocking arm 74. The link 88 pivots the blocking arm 74 about the pivot pin 78 in the clockwise direction and against the biasing force of the spring 86 from the first blocking position to the second blocking position as shown in solid lines in Figure 4. The latch gate 62 retains the latch plate 48 in the unlatched position, which therefore, retains the blocking arm 74 in the second blocking position. As depicted in Figure 4, the upper arm 80 of the blocking arm 74 is now position immediately adjacent to and below the nub 84 on the seat back 20. Therefore, if the occupant attempts to pivot the seat back 20 from the folded position back to the upright seating position, the nub 84 will contact the upper arm 80 and prevent the pivotal movement of the seat back 20 while the locking latch 46 is in the unlatched position. The seat assembly 14 may now be pivoted about the front seat risers 34, 36 to the forward tumbled position as shown in Figure 2. In the tumble position, the rear seat risers 40, 42 may be pivoted to a stowed position against the support frame 24 by a linkage mechanism as is commonly known in the art.

When it is desirable to return the seat assembly 14 from the folded and tumbled position to the seating position, the seat cushion 18 is pivoted rearwardly about the front seat risers 34, 36 with the seat back 20 in the folded position against the seat cushion 18. When the seat cushion 18 approaches the generally horizontal seating position as shown in Figure 4, the latch gate 62 engages the striker bar 56 to pivot the latch gate 62 clockwise about the pivot pin 64 to the closed position and the striker bar 56 is received in the hook portion 52 of the latch plate 48. The latch spring 58 biases the latch plate 48 in the latched position engaged with and latched to the striker bar 56. Further, once the latch plate 48 is pivoted to the latched position, the tension on the link 88, or cable, is released. The spring 86 automatically pivots the blocking arm 74 about the pivot pin 78 from the second blocking position to the first blocking position. The blocking arm 74 is now spaced forward of and below the nub 84 on the seat back 20 so that the seat back 20 is free to pivot by the seat back pivot mechanism 22 from the folded position, as shown in Figure 4, to the upright seating position and shown in Figure 3. If the latch plate 48 is not pivoted to the latched position and engaged with the striker bar 56, the tension in the link 88 maintains the blocking arm 74 in the second blocking position to interfere with the nub 84 on the seat back 20 and prevent the seat back 20 from returning to the upright seat position.

The invention has been described in an illustrative manner, and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

5 Obviously, many modification and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced other than as specifically described.

What is claimed is:

1. A seat assembly for use in an automotive vehicle comprising:

a seat cushion for supporting a seat occupant on said seat assembly;

5 a seat back operatively coupled to said seat cushion for pivotal movement between a generally upright seating position and a forwardly folded position pivoted against said seat cushion;

a seat back pivot mechanism coupled to said seat back and operable between a locked position locking said seat back in said upright seating position and an unlocked position for
10 providing pivotal movement of said seat back between said upright seating position and said folded position;

a front seat riser adapted to secure said seat assembly to the vehicle, said front seat riser pivotally coupled to said seat cushion for pivoting said seat cushion between a generally horizontal seating position and a generally upright tumbled position;

15 a rear seat riser adapted to releasably secure said seat assembly to the vehicle, said rear seat riser including a locking latch operable between a latched position for releasably latching said rear seat riser to the vehicle with said seat cushion in said seating position and an unlatched position for releasing said rear seat riser from the vehicle to allow said seat cushion to pivot from said seating position to said tumble position; and

20 a blocking member coupled between said seat back and said locking latch and operable in a first blocking position for engaging said seat back in said upright seating position and preventing said locking latch from releasing from said latched position to said unlatched position when said seat back is locked by said seat back pivot mechanism in said upright seating position.

25 2. A seat assembly as set forth in claim 1 wherein said blocking member is operable in a second blocking position for engaging said seat back in said folded position when said locking latch is in said unlatched position and preventing pivotal movement of said seat back from said folded position to said seating position until said locking latch is returned to said
30 latched position latching said rear seat riser to the vehicle with said seat cushion in said seating position.

3. A seat assembly as set forth in claim 1 wherein said locking latch includes a latch gate pivotally connected to said rear seat riser for pivotal movement between 1) an open position

engaging and retaining said locking latch in said unlatched position when said seat cushion is released and pivotal between said seating position and said tumble position and for retaining said blocking member in said second blocking position until said locking latch is returned to said latched position and 2) a closed position disengaged from said locking latch when said locking latch is in said locked position.

4. A seat assembly as set forth in claim 2 further including a support bracket secured to said rear seat riser for supporting said seat back pivot mechanism between said seat back and said seat cushion and for supporting said blocking member between said locking latch and said seat back.

5. A seat assembly as set forth in claim 3 wherein said blocking member includes a blocking arm pivotally connected to said support plate for pivotal movement between said first blocking position and said second blocking position in response to said locking latch operating between said latched position and said unlatched position.

6. A seat assembly as set forth in claim 4 wherein said blocking member includes a spring bias member connected between said support bracket and said blocking arm for automatically returning said blocking arm to said first blocking position when said locking latch returns from said unlatched position to said latched position.

7. A seat assembly as set forth in claim 5 wherein said locking latch includes a latch plate pivotally coupled to said rear seat riser for pivotal movement between said latched position and said unlatched position.

8. A seat assembly as set forth in claim 6 further including a link interconnected between said latch plate and said blocking arm for pivoting said blocking arm from said first blocking position to said second blocking position in response to said latch plate pivoting from said latched position to said unlatched position.

9. A seat assembly as set forth in claim 7 wherein said locking latch includes a latch spring connected between said latch plate and said rear seat riser for biasing said latch plate from said unlatched position to said latched position.

10. A seat assembly as set forth in claim 8 wherein said locking latch includes a gate spring connected between said latch gate and said latch plate for biasing said latch gate to said open position.

5 11. A seat assembly as set forth in claim 9 further including a release handle pivotally secured to said rear seat riser and engagable with said locking latch for pivoting said latch plate from said latched position to said unlatched position.

10 12. A seat assembly as set forth in claim 10 wherein said blocking arm includes a lower leg pivotally connected to said support bracket for engaging said seat back in said first blocking position and an upper arm for engaging said seat back in said second blocking position.

15 13. A seat assembly as set forth in claim 11 further including a seat cushion spring bias member interconnected between said seat cushion and said front seat riser for biasing said seat cushion from said seating position to said tumbled position.

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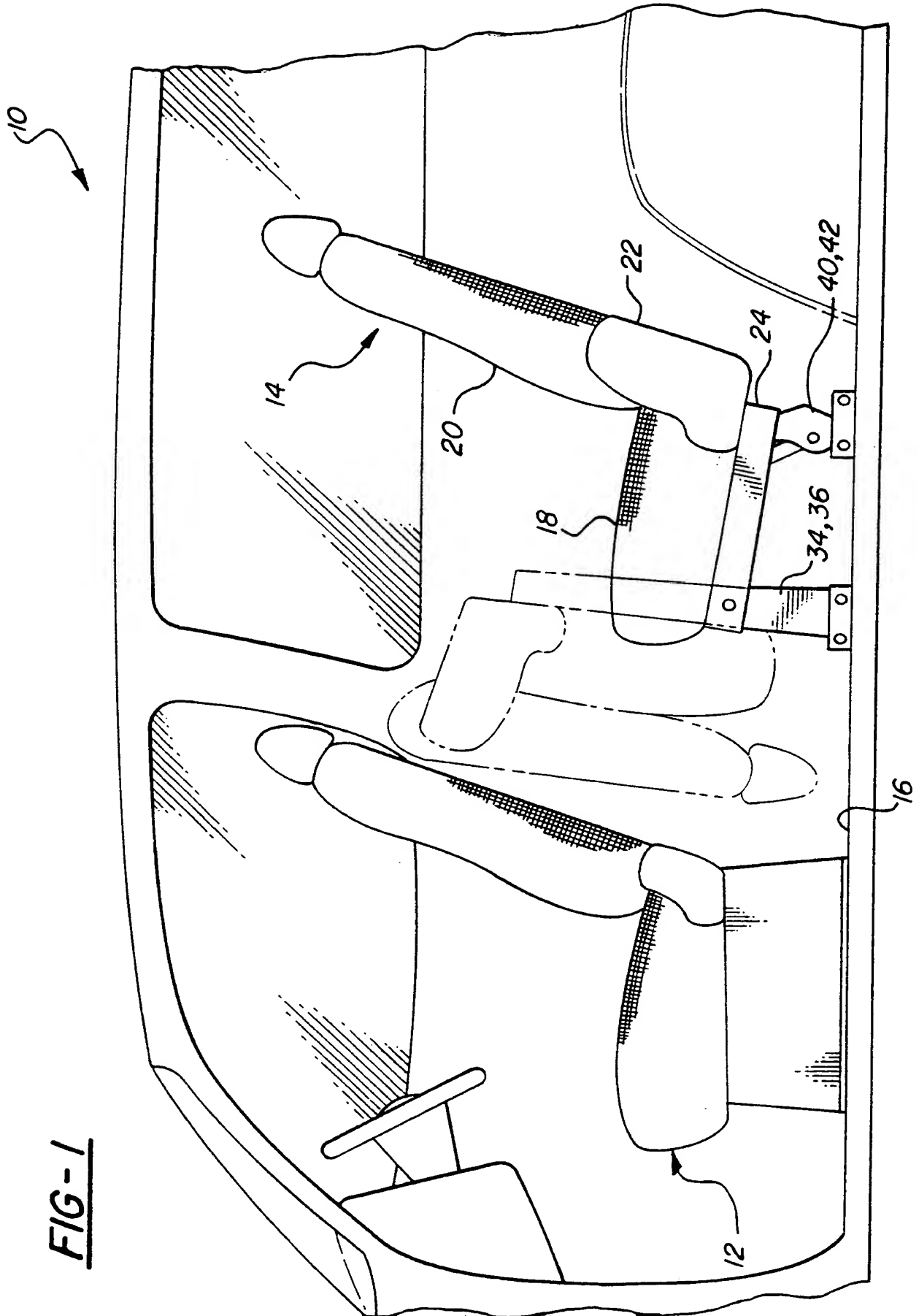


FIG - 2

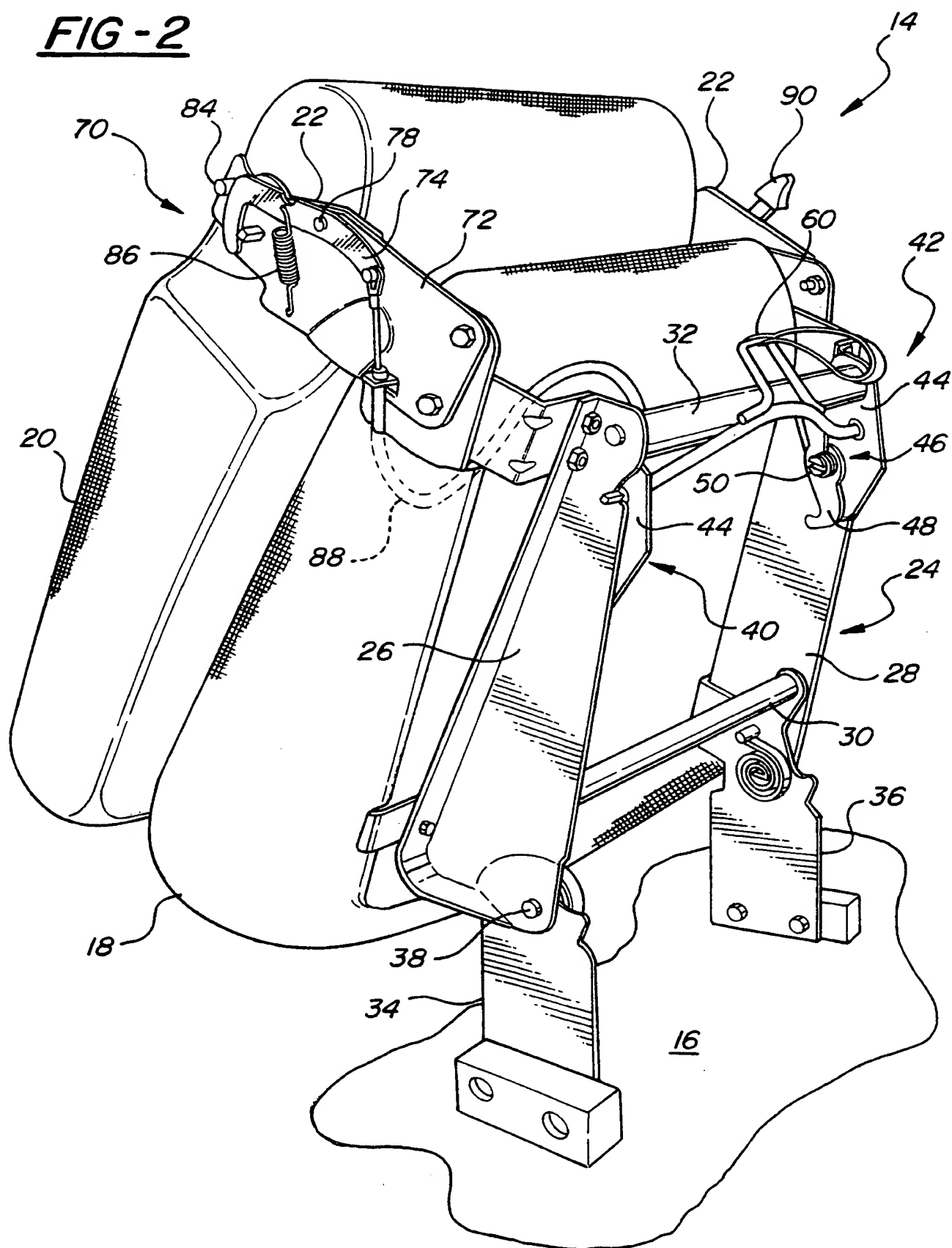
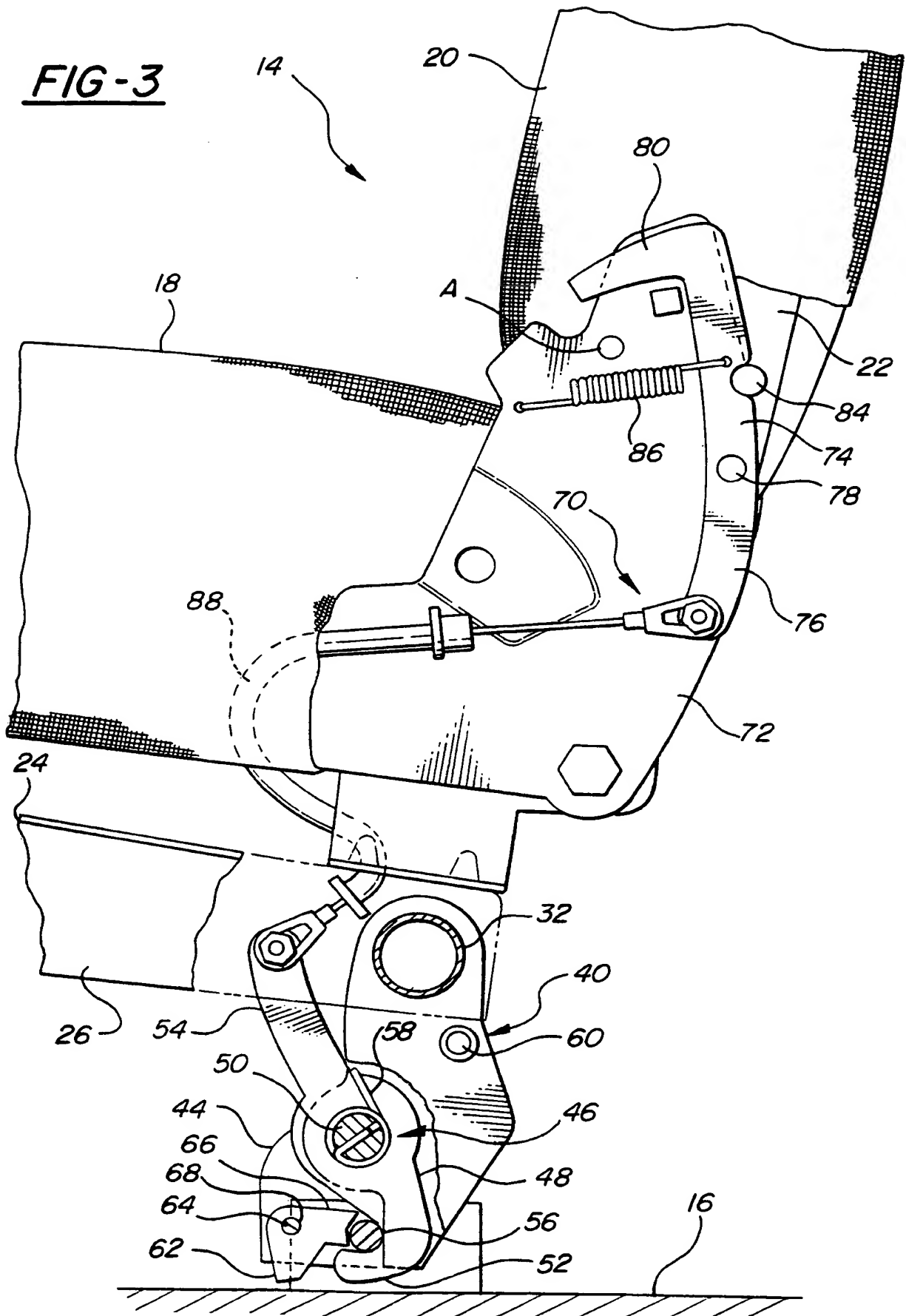
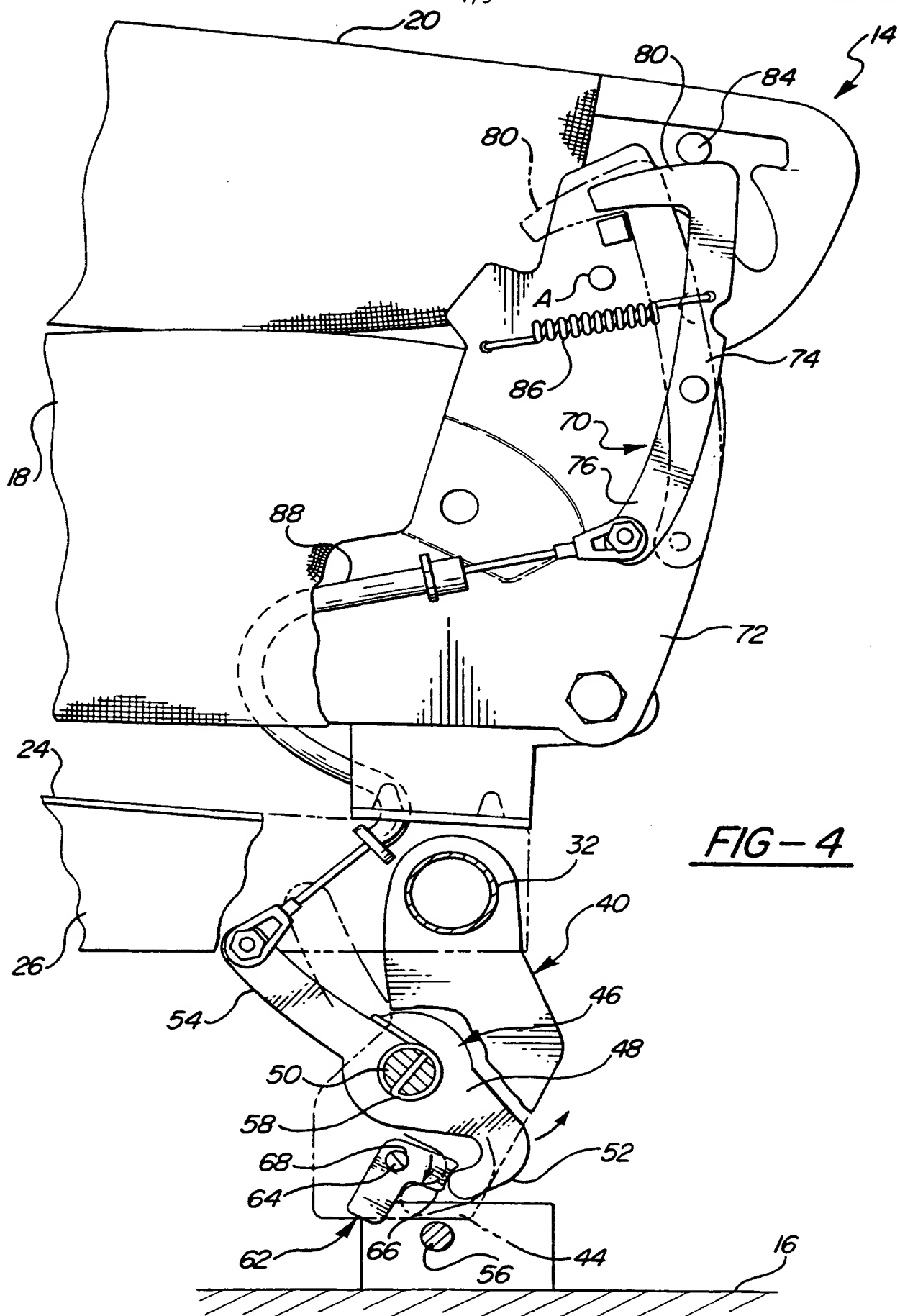
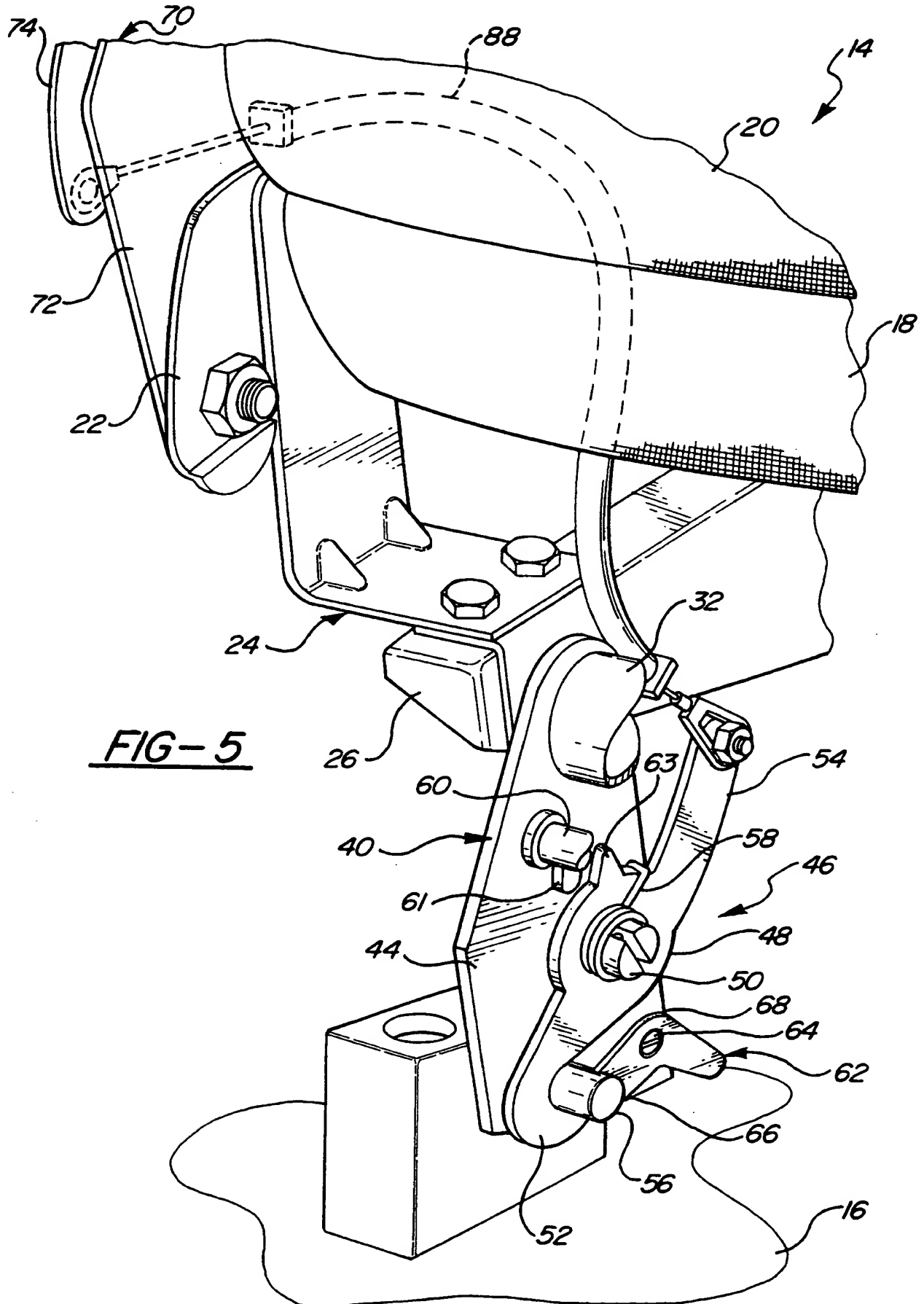


FIG-3







INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 00/00264

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60N2/015 B60N2/10 B60N2/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 20848 A (TRICOM AUTOMOTIVE LIMITED ET AL.) 11 July 1996 (1996-07-11) abstract	1-4
A	page 9, line 24 -page 13, line 22; claim 1; figures 1-8B	5-13
X	EP 0 780 259 A (CESA COMPAGNIE EUROPEENNE DE SIEGES POUR AUTOMOBILES) 25 June 1997 (1997-06-25) abstract	1,2,4
A	column 7, line 52 -column 9, line 37; figures 1-14	3,5-13
X,P	FR 2 770 811 A (BERTRAND FAURE EQUIPEMENTS SA) 14 May 1999 (1999-05-14) abstract	1,2,4
A	page 8, line 25 -page 11, line 16; figures 1-10	3,5-13
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"8" document member of the same patent family

Date of the actual completion of the international search

19 June 2000

Date of mailing of the international search report

28/06/2000

Name and mailing address of the ISA

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Cuny, J-M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 00/00264

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 393 116 A (JAMES BOLSWORTH ET AL.) 28 February 1995 (1995-02-28) cited in the application abstract; figures 1-5 -----	1-13
A	US 5 775 763 A (JEFFREY ALAN GLINTER ET AL.) 7 July 1998 (1998-07-07) cited in the application abstract; figures 1-5 -----	1,3

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter: nal Application No

PCT/CA 00/00264

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9620848	A	11-07-1996	AU 4311396 A	24-07-1996
			DE 69508281 D	15-04-1999
			DE 69508281 T	08-07-1999
			EP 0801608 A	22-10-1997
			GB 2311213 A,B	24-09-1997
			US 5938286 A	17-08-1999
EP 780259	A	25-06-1997	FR 2742708 A	27-06-1997
			DE 69604373 D	28-10-1999
			DE 69604373 T	03-02-2000
			JP 2784351 B	06-08-1998
			JP 9188177 A	22-07-1997
			US 5810443 A	22-09-1998
FR 2770811	A	14-05-1999	NONE	
US 5393116	A	28-02-1995	NONE	
US 5775763	A	07-07-1998	EP 0781681 A	02-07-1997

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
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BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A seat assembly (14) for use in an automotive vehicle and pivotal between a seating position and a fold and tumbled position. The seat assembly (14) includes a seat cushion (18) and a seat back (20) pivotally connected to the seat cushion for pivotal movement between an upright seating position and a folded position. The seat assembly includes a locking latch (46) supported by the seat cushion and pivotal between a latched position for releasably latching the seat assembly (14) to the floor (16) of the vehicle and an unlatched position for releasing the seat assembly to allow the seat assembly to pivot from the seating position to the tumbled position. The seat assembly further includes a blocking member (70) coupled between the seat back (20) and the locking latch (46) and operable in a first blocking position for engaging the seat back and preventing the locking latch from releasing from the latched position when the seat back is in the upright seating position. The blocking member (70) is also operable in a second blocking position for engaging the seat back in the folded position when the locking latch is in the unlatched position to prevent pivotal movement of the seat from the folded position to the upright seating position until the locking latch is returned to the latched position securing the seat assembly in the seating position.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 14 November 2000 (14.11.00)	
International application No. PCT/CA00/00264	Applicant's or agent's file reference 701583PCT.
International filing date (day/month/year) 13 March 2000 (13.03.00)	Priority date (day/month/year) 12 March 1999 (12.03.99)
Applicant TAME, Omar, D.	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

12 October 2000 (12.10.00)

☐ in a notice effecting later election filed with the International Bureau on:
2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
---	--

PATENT COOPERATION TREATY

SNA INTERNATIONAL INC.
TRADEMARK DEPARTMENT
RECEIVED

JUN 26 2001

DOCKETED 701583 PCT

PCT

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

IMAI, J.
MAGNA INTERNATIONAL INC.
337 Magna Drive
Aurora, Ontario L4G 7K1
CANADA

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year) 22.06.2001

Applicant's or agent's file reference
701583PCT

IMPORTANT NOTIFICATION

International application No.
PCT/CA00/00264

International filing date (day/month/year)
13/03/2000

Priority date (day/month/year)
12/03/1999

Applicant
MAGNA SEATING SYSTEMS INC. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Diebold, N

Tel. +49 89 2399-2961




PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 701583PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/CA00/00264	International filing date (<i>day/month/year</i>) 13/03/2000	Priority date (<i>day/month/year</i>) 12/03/1999
International Patent Classification (IPC) or national classification and IPC B60N2/015		
Applicant MAGNA SEATING SYSTEMS INC. et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input checked="" type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application 		
Date of submission of the demand 12/10/2000	Date of completion of this report 22.06.2001	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Krysta, D Telephone No. +49 89 2399 2942	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA00/00264

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, pages:

2-10	as originally filed			
1,1a	as received on	20/04/2001	with letter of	12/04/2001

Claims, No.:

3 (part),4-13	as originally filed			
1,2,3 (part)	as received on	20/04/2001	with letter of	12/04/2001

Drawings, sheets:

1/5-5/5	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA00/00264

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 3,5-13
	No: Claims 1,2,4
Inventive step (IS)	Yes: Claims
	No: Claims 1-13
Industrial applicability (IA)	Yes: Claims -13
	No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00264

Point V:

1 Reference is made to the following documents:

- D1: WO 96 20848 A (TRICOM AUTOMOTIVE LIMITED ET AL.) 11 July 1996 (1996-07-11)
- D2: EP-A-0 780 259 (CESA COMPAGNIE EUROPEENNE DE SIEGES POUR AUTOMOBILES) 25 June 1997 (1997-06-25)
- D3: FR-A-2 770 811 (BERTRAND FAURE EQUIPEMENTS SA) 14 May 1999 (1999-05-14)
- D4: US-A-5 393 116 (JAMES BOLSWORTH ET AL.) 28 February 1995 (1995-02-28) cited in the application
- D5: US-A-5 775 763 (JEFFREY ALAN GLINTER ET AL.) 7 July 1998 (1998-07-07) cited in the application

2. D2 discloses:

"a seat assembly (10) for use in an automotive vehicle comprising
--- a seat cushion (14) for supporting a seat occupant on said seat assembly (10);
a seat back (16) operatively coupled to said seat cushion (14) for pivotal movement between a generally upright seating position (Fig.1) and a forwardly folded position (Fig.6) pivoted against said seat cushion (14);
a seat back pivot mechanism (Fig.7,9-14) coupled to said seat back (16) and operable between a locked position locking said seat back (16) in said upright seating position and an unlocked position for providing pivotal movement of said seat back (16) between said upright seating position and said folded position (col.7,l.57 - col.8,l.29);
a front seat riser (18) adapted to secure said seat assembly (10) to the vehicle, said front seat riser (18) pivotally coupled (via frame 12) to said seat cushion (14) for pivoting said seat cushion (14) between a generally horizontal seating position and a generally upright tumbled position;
a rear seat riser (20) adapted to releasably secure said seat assembly (10) to the vehicle, said rear seat riser including a locking latch (28) operable between a

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/CA00/00264

latched position for releasably latching said rear seat riser (20) to the vehicle with said seat cushion (14) in said seating position and an unlatched position for releasing said rear seat riser (20) from the vehicle to allow said seat cushion (14) to pivot from said seating position to said tumble position; and a blocking member directly (col.6, l.39-42) coupled between said seat back (16) and said locking latch (28) and operable in a first blocking position for engaging said seat back (16) in said upright seating position and preventing said locking latch (28) from releasing from said latched position to said unlatched position when said seat back (16) is locked by said seat back pivot mechanism in said upright seating position (col.4, l.39-43)."

Therefore, claim 1 is not new (Article 33(2) PCT).

3. The additional features of dependent claims 2 and 4 are also known from D2 and, therefore, cannot add novelty (Article 33(2) PCT).
4. The additional features of dependent claims 3 and 5 to 13 are known from D1 or refer to general knowledge of a skilled person and, therefore, cannot add an inventive step (Article 33(3) PCT).

Point VII:

- 1 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2 PCT).

PATENT COOPERATION TREATY
From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing

(day/month/year) 28/06/2000

Applicant's or agent's file reference
701583PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/CA 00/ 00264

International filing date
(day/month/year) 13/03/2000

Applicant
MAGNA SEATING SYSTEMS INC. et al.

1. © The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the

International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO

34, chemin des Colombettes
1211 Geneva 20, Switzerland

Fascimile No.: (41-22) 740.14.35

For more detailed Instructions, see the notes on the accompanying sheet.

2. 0 The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. a With regard to the protest against payment of (an) additional fees under Rule

40.2, the applicant is notified that: the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices. no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following: 'I Shortly after 18 months from the priority date, the International application will be published by the International Bureau.

If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the

completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant

wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase

before all designated Offices which have not been elected in the demand or in a later election within 19 months from the

priority date or could not be elected because they are not bound by Chapter II.

Authorized officer

Name and mailing address of the International Searching Authority

4European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk

Bernd Stephan

Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

0A

Fax: (+31-70) 340-3016

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide; a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the International search report, one opportunity to amend the claims of the International application. It should however be emphasized that, since all parts of the International application (claims, description and drawings) may be amended during the International preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before International publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the International phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the International application may be amended under Article 28 or, where applicable, Article 41.

When? Within 2 months from the date of transmittal of the International search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How? Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.
A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.
All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).
The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the International application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the International application is English, the letter must be in English; if the language of the International application is French, the letter must be in French.

Notes to Form PCT/ISA/220 (first sheet) (January 1994)



NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. (Where originally there were 48 claims and after amendment of some claims there are 511: 'Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added.'
2. (Where originally there were 15 claims and after amendment of all claims there are 111: 'Claims 1 to 15 replaced by amended claims 1 to 11.'
3. (Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims):
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
'Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added.'

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words 'Statement under Article 19(1).'

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

Notes to Form PCT/ISA/220 (second sheet) (January 1994)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 701583PCT	FOR FURTHER see Notification of Transmittal of International Search Report ACTION (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CA 00/ 00264	International filing date (<i>day/month/year</i>) 13/03/2000	(Earliest) Priority Date (<i>day/month/year</i>) 12/03/1999
Applicant MAGNA SEATING SYSTEMS INC. et al.		
<p>This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau. This International Search Report consists of a total of 4 sheets.</p> <p>© It is also accompanied by a copy of each prior art document cited in this report.</p>		
<p>1. Basis of the report</p> <p>a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item. the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).</p> <p>b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished</p> <p>2. ~Certain claims were found unsearchable (See Box I).</p> <p>3. F- Unity of Invention is lacking (see Box II).</p> <p>4. With regard to the title, © the text is approved as submitted by the applicant. the text has been established by this Authority to read as follows:</p> <p>5. With regard to the abstract, the text is approved as submitted by the applicant. the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.</p> <p>6. The figure of the drawings to be published with the abstract is Figure No. © as suggested by the applicant. ~None of the figures. because the applicant failed to suggest a figure. because this figure better characterizes the invention.</p>		

INTERNATIONAL SEARCH REPORT

PCT/CA 00/ 00264

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A seat assembly (14) for use in an automotive vehicle and pivotal between a seating position and a fold and tumbled position. The seat assembly (14) includes a seat cushion (18) and a seat back (20) pivotally connected to the seat cushion for pivotal movement between an upright seating position and a folded position. The seat assembly includes a locking latch (46) supported by the seat cushion and pivotal between a latched position for releasably latching the seat assembly (14) to the floor (16) of the vehicle and an unlatched position for releasing the seat assembly to allow the seat assembly to pivot from the seating position to the tumbled position. The seat assembly further includes a blocking member (70) coupled between the seat back (20) and the locking latch (46) and operable in a first blocking position for engaging the seat back and preventing the locking latch from releasing from the latched position when the seat back is in the upright seating position. The blocking member (70) is also operable in a second blocking position for engaging the seat back in the folded position when the locking latch is in the unlatched position to prevent pivotal movement of the seat from the folded position to the upright seating position until the locking latch is returned to the latched position securing the seat assembly in the seating position.

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B60N2/015 B60N2/10 B60N2/20 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 B60N i		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 20848 A (TRICOM AUTOMOTIVE LIMITED ET AL.) 11 July 1996 (1996-07-11) abstract	1-4
A	page 9, line 24 -page 13, line 22; claim 1; figures 1-8B	5-13
X	EP 0 780 259 A (CESA COMPAGNIE EUROPEENNE DE SIEGES POUR AUTOMOBILES) 25 June 1997 (1997-06-25) abstract	1,2,4
A	column 7, line 52 -column 9, line 37; figures 1-14	3,5-13
X,P	FR 2 770 811 A (BERTRAND FAURE EQUIPEMENTS SA) 14 May 1999 (1999-05-14) abstract	1,2,4
A	page 8, line 25 -page 11, line 16; figures 1-10	3,5-13
Further documents are listed in the continuation of box C. ~Patent family members are listed in annex.		
° Special categories of cited documents "T" later document published after the international filing date "A" document defining the general state of the art which is not or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to "L" document which may throw doubts on priority claims) or involve an inventive step when the document is taken alone which is cited to establish the publication date of another "Y" document of particular relevance; the claimed invention citation or other special reason (as specified) cannot be considered to involve an inventive step when the "O" document referring to an oral disclosure, use, exhibition or document is combined with one or more other such documents, such combination being obvious to a person skilled "P" document published prior to the international filing date but in the art later than the priority date claimed "B" document member of the same patent family		
Date of the actual completion of the international search 19 June 2000		Date of mailing of the international search report 28/06/2000
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Cuny, J-M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 393 116 A (JAMES BOLSWORTH ET AL.) 28 February 1995 (1995-02-28) cited in the application abstract; figures 1-5	1-13
A	US 5 775 763 A (JEFFREY ALAN GLINTER ET AL.) 7 July 1998 (1998-07-07) cited in the application abstract; figures 1-5	1,3

INTERNATIONAL SEARCH REPORT

International Application No

Information on patent family members

PCT/CA00/00264

Patent document cited in search report	Publication date	Patent family members)	Publication date
WO 9620848	A	11-07-1996 AU	4311396 A24-07-1996
		DE 69508281 D	15-04-1999
		DE 69508281 T	08-07-1999
		EP 0801608 A	22-10-1997
		GB 2311213 A,B	24-09-1997
		US 5938286 A	17-08-1999

EP 780259	A	25-06-1997 FR	2742708 A27-06-1997
		DE 69604373 D	28-10-1999
		DE 69604373 T	03-02-2000
		JP 2784351 B	06-08-1998
		JP 9188177 A	22-07-1997
		US 5810443 A	22-09-1998

FR 2770811	A	14-05-1999	NONE
US 5393116	A	-28_02-1995	-NONE

US 5775763	A	07-07-1998	EP 0781681 A 02-07-1997

REC'D 26 JUN 2001

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

16


Applicant's or agent's file reference 701583PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/CA00/00264	International filing date (day/month/year) 13/03/2000	Priority date (day/month/year) 12/03/1999
International Patent Classification (IPC) or national classification and IPC B60N2/015		
Applicant MAGNA SEATING SYSTEMS INC. et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12/10/2000	Date of completion of this report 22.06.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Krysta, D Telephone No. +49 89 2399 2942



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA00/00264

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

2-10	as originally filed			
1,1a	as received on	20/04/2001	with letter of	12/04/2001

Claims, No.:

3 (part),4-13	as originally filed			
1,2,3 (part)	as received on	20/04/2001	with letter of	12/04/2001

Drawings, sheets:

1/5-5/5	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/CA00/00264

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	3,5-13
	No:	Claims	1,2,4
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-13
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Point V:

1. Reference is made to the following documents:

- D1: WO 96 20848 A (TRICOM AUTOMOTIVE LIMITED ET AL.) 11 July 1996 (1996-07-11)
- D2: EP-A-0 780 259 (CESA COMPAGNIE EUROPEENNE DE SIEGES POUR AUTOMOBILES) 25 June 1997 (1997-06-25)
- D3: FR-A-2 770 811 (BERTRAND FAURE EQUIPEMENTS SA) 14 May 1999 (1999-05-14)
- D4: US-A-5 393 116 (JAMES BOLSWORTH ET AL.) 28 February 1995 (1995-02-28) cited in the application
- D5: US-A-5 775 763 (JEFFREY ALAN GLINTER ET AL.) 7 July 1998 (1998-07-07) cited in the application

2. D2 discloses:

"a seat assembly (10) for use in an automotive vehicle comprising a seat cushion (14) for supporting a seat occupant on said seat assembly (10); a seat back (16) operatively coupled to said seat cushion (14) for pivotal movement between a generally upright seating position (Fig.1) and a forwardly folded position (Fig.6) pivoted against said seat cushion (14); a seat back pivot mechanism (Fig.7,9-14) coupled to said seat back (16) and operable between a locked position locking said seat back (16) in said upright seating position and an unlocked position for providing pivotal movement of said seat back (16) between said upright seating position and said folded position (col.7, l.57 - col.8, l.29); a front seat riser (18) adapted to secure said seat assembly (10) to the vehicle, said front seat riser (18) pivotally coupled (via frame 12) to said seat cushion (14) for pivoting said seat cushion (14) between a generally horizontal seating position and a generally upright tumbled position; a rear seat riser (20) adapted to releasably secure said seat assembly (10) to the vehicle, said rear seat riser including a locking latch (28) operable between a

latched position for releasably latching said rear seat riser (20) to the vehicle with said seat cushion (14) in said seating position and an unlatched position for releasing said rear seat riser (20) from the vehicle to allow said seat cushion (14) to pivot from said seating position to said tumble position; and
a blocking member directly (col.6,l.39-42) coupled between said seat back (16) and said locking latch (28) and operable in a first blocking position for engaging said seat back (16) in said upright seating position and preventing said locking latch (28) from releasing from said latched position to said unlatched position when said seat back (16) is locked by said seat back pivot mechanism in said upright seating position (col.4,l.39-43)."

Therefore, claim 1 is not new (Article 33(2) PCT).

3. The additional features of dependent claims 2 and 4 are also known from D2 and, therefore, cannot add novelty (Article 33(2) PCT).
4. The additional features of dependent claims 3 and 5 to 13 are known from D1 or refer to general knowledge of a skilled person and, therefore, cannot add an inventive step (Article 33(3) PCT).

Point VII:

1. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2 PCT).

SAFETY MECHANISM FOR A FOLD AND TUMBLE SEAT ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention relates generally to a fold and tumble seat assembly, and more particularly, to a safety mechanism for controlling the folding and tumbling of a seat back and seat cushion of the seat assembly.

2. Description of the Prior Art

10 Seat assemblies for automotive vehicles typically include a generally horizontal seat cushion and a generally upright seat back for supporting a seat occupant in an upright seating position. The seat cushion is commonly mounted to a planar floor within the vehicle by front and rear seat cushion risers and the seat back is commonly pivotally attached to a seat cushion for pivotal movement between the upright seating position to a forward folded position resting against the generally horizontal seat cushion. The forward folding movement of the seat back accommodates increase
15 storage capacity in automotive vehicles, such as sport utility vehicle, mini-vans, and the like. The seat assembly may also be pivotal about the front seat cushion risers from the seating position to a forward tumble position wherein the seat back is pivoted to the folded position and then the seat cushion and seat back are pivoted about the front seat cushion riser to an upright tumble position. These type of seat assemblies, commonly referred to as fold and tumble seat assemblies, are
20 exemplified in United States Patent No. 5,393,116 to Bolsworth et al., issued February 28, 1995 and United States Patent No. 5,775,763 to Gliner et al., issued July 7, 1998.

25 Preferably, the seat back is pivoted to the folded position prior to the seat cushion and seat back being pivoted to the tumbled position. Additionally, the seat back is preferably pivoted from the folded position to the upright seating position after the seat cushion has been fully pivoted and returned from the tumbled position to the seating position.

30 It remains desirable, however, to provide a safety mechanism to ensure and insist that the seat assembly may not be pivoted from the seating position to the tumble position until the seat back has been pivoted to the folded position. It also remains desirable to provide a safety mechanism to ensure and insist that the seat assembly is fully returned to from the tumble position to the seating position and secured to the vehicle floor prior to the seat back being pivoted from the folded position to the upright seating position for seat occupant use.

Attempts have been made to provide such safety mechanisms. For example, European Patent

780259 discloses a seat assembly having a frame with a seat cushion, seat back and support foot. The seat back is able to pivot relative to the seat cushion between an upright position and a forwardly folded position. The support foot has a ball lock for releaseably fastening it to the floor of the vehicle. The seat back and seat cushion are interconnected by a mobile mechanism which allows the relative position to be remotely adjusted. A catch locks the seat back in position where the seat cannot be occupied. The mechanism incorporates a pivot pin which slides in a guide fixed to the seat frame. The catch has a hook which can be moved between locked and released positions to move the pin and lock the catch prevent seat back movement.

10 Another example is shown in PCT application PCT/GB95/03046, published July 11, 1996. The PCT application discloses a locking mechanism for a folding vehicle seat which ensures that the seat cannot be unfolded to a position suitable for use as a seat unless it is correctly engaged with latching points on the vehicle floor. The mechanism provides an actuating control including a blocking member and a lever for moving the blocking member into and out of engagement with the
15 seat back to facilitate movement of the seat back from a folded position to an upright position once the seat is correctly engaged with the latching points. The lever of the actuating control is manipulated by a separate mechanism associated with the latching points.

What is claimed is:

1. A seat assembly for use in an automotive vehicle comprising:

a seat cushion for supporting a seat occupant on said seat assembly;

5 a seat back operatively coupled to said seat cushion for pivotal movement between a generally upright seating position and a forwardly folded position pivoted against said seat cushion;

10 a seat back pivot mechanism coupled to said seat back and operable between a locked position locking said seat back in said upright seating position and an unlocked position for providing pivotal movement of said seat back between said upright seating position and said folded position;

a front seat riser adapted to secure said seat assembly to the vehicle, said front seat riser pivotally coupled to said seat cushion for pivoting said seat cushion between a generally horizontal seating position and a generally upright tumbled position;

15 a rear seat riser adapted to releasably secure said seat assembly to the vehicle, said rear seat riser including a locking latch operable between a latched position for releasably latching said rear seat riser to the vehicle with said seat cushion in said seating position and an unlatched position for releasing said rear seat riser from the vehicle to allow said seat cushion to pivot from said seating position to said tumble position; and

20 a blocking member directly coupled between said seat back and said locking latch and operable in a first blocking position for engaging said seat back in said upright seating position and preventing said locking latch from releasing from said latched position to said unlatched position when said seat back is locked by said seat back pivot mechanism in said upright seating position.

25 2. A seat assembly as set forth in claim 1 wherein said blocking member is operable in a second blocking position for engaging said seat back in said folded position when said locking latch is in said unlatched position and preventing pivotal movement of said seat back from said folded position to said seating position until said locking latch is returned to said latched position latching said rear seat riser to the vehicle with said seat cushion in said seating position.

30 3. A seat assembly as set forth in claim 1 wherein said locking latch includes a latch gate pivotally connected to said rear seat riser for pivotal movement between 1) an open position